

CLAIMS

What is claimed:

- 5 1. A process for preparing rigid urethane-modified polyisocyanurate foam comprising the step of reacting an organic polyisocyanate with a polyfunctional isocyanate-reactive component in the presence of a blowing agent and a trimerisation catalyst characterized in that the process is carried out in the presence of a carboxylic acid.
- 10 2. The process according to claim 1 wherein the carboxylic acid has a molecular weight below 250.
3. The process according to claim 1 wherein the carboxylic acid has a pKa value in water of between 1 and 5.5.
- 15 4. The process according to claim 2 wherein the carboxylic acid has a pKa value in water of between 1 and 5.5.
- 20 5. The process according to claim 1 wherein the carboxylic acid is functionalised with at least one additional OH, COOH, SH, NH₂, NHR, NO₂ or halogen functional group, wherein R is an alkyl, cycloalkyl or aryl group.
- 25 6. The process according to claim 2 wherein the carboxylic acid is functionalised with at least one additional OH, COOH, SH, NH₂, NHR, NO₂ or halogen functional group, wherein R is an alkyl, cycloalkyl or aryl group.
7. The process according to claim 3 wherein the carboxylic acid is functionalised with at least one additional OH, COOH, SH, NH₂, NHR, NO₂ or halogen functional group, wherein R is an alkyl, cycloalkyl or aryl group.

8. The process according to claim 4 wherein the carboxylic acid is functionalised with at least one additional OH, COOH, SH, NH₂, NHR, NO₂ or halogen functional group, wherein R is an alkyl, cycloalkyl or aryl group.

5 9. The process according to claim 5 wherein the carboxylic acid is functionalised in α or β position with respect to the carboxyl group.

10. The process according to claim 6 wherein the carboxylic acid is functionalised in α or β position with respect to the carboxyl group.

10 11. The process according to claim 9 wherein said functionalised carboxylic acid corresponds to the general formula X_n - R' - COOH wherein X is OH, COOH, SH, NH₂, NHR, NO₂ or halogen, R' is an at least divalent hydrocarbon moiety, n is an integer having a value of at least 1 and allows for mono and polyfunctional substitution on the hydrocarbon moiety.

15 12. The process according to claim 10 wherein said functionalised carboxylic acid corresponds to the general formula X_n - R' - COOH wherein X is OH, COOH, SH, NH₂, NHR, NO₂ or halogen, R' is an at least divalent hydrocarbon moiety, n is an integer having a value of at least 1 and allows for mono and polyfunctional substitution on the
20 hydrocarbon moiety.

13. The process according to claim 11 wherein X is OH or COOH, n is 1 and R' is a linear or branched aliphatic or aromatic hydrocarbon having 2 to 6 carbon atoms.

25 14. The process according to claim 12 wherein X is OH or COOH, n is 1 and R' is a linear or branched aliphatic or aromatic hydrocarbon having 2 to 6 carbon atoms.

15. The process according to claim 1 wherein said carboxylic acid is lactic acid, salicylic acid, maleic acid, acetic acid, or malic acid.

16. The process according to claim 2 wherein said carboxylic acid is lactic acid, salicylic acid, maleic acid, acetic acid, or malic acid.

5 17. The process according to claim 11 wherein said carboxylic acid is lactic acid, salicylic acid, maleic acid, acetic acid, or malic acid.

18. The process according to claim 1 wherein said carboxylic acid is used in an amount ranging from 0.05 to 5 % by weight based on the isocyanate-reactive component.

10 19. The process according to claim 2 wherein said carboxylic acid is used in an amount ranging from 0.05 to 5 % by weight based on the isocyanate-reactive component.

20. The process according to claim 1 wherein the trimerisation catalyst is a metal salt trimerisation catalyst.

15 21. The process according to claim 2 wherein the trimerisation catalyst is a metal salt trimerisation catalyst.

20 22. The process according to claim 20 wherein the metal salt trimerisation catalyst is an alkali metal salt of an organic carboxylic acid.

23. The process according to claim 21 wherein the metal salt trimerisation catalyst is an alkali metal salt of an organic carboxylic acid.

25 24. The process according to claim 23 wherein the metal salt trimerisation catalyst is potassium acetate or potassium 2-ethylhexanoate.

25. The process according to claim 24 wherein the metal salt trimerisation catalyst is used in an amount ranging from 0.5 to 5 % by weight based on the isocyanate-reactive component.

26. The process according to claim 1 wherein the reaction is carried out at an isocyanate index of 150 to 450 %.

5 27. The process according to claim 1 wherein the blowing agent is water, a hydrocarbon, a hydrofluorocarbon, or mixtures of any or some of the foregoing.

10 28. A rigid urethane-modified polyisocyanurate foam obtained by reacting an organic polyisocyanate with a polyfunctional isocyanate-reactive component in the presence of a blowing agent and a trimerisation catalyst characterized in that the reaction is carried out in the presence of a carboxylic acid.

15 29. A polyfunctional isocyanate-reactive composition containing a metal salt trimerisation catalyst and a carboxylic acid.

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